

**Practice: 558 - Roof Runoff Structure****Scenario: #1 - RoofGutter,Small****Scenario Description:**

A gutter-downspout system for the side of a 30'x70' livestock confinement building, to exclude clean water from the loafing area adjacent to the building. Roof area served by the 70' long gutter is 1,050 square feet. The gutter is a 5" K-type, with two 12' downspouts to convey the roof runoff to ground level. Underground outlets (CPS 620) are then utilized to safely outlet the water from the downspouts. Facilitates waste management and protects environment by minimizing clean water additions to waste systems and addresses water quality concerns.

Associated practices include Waste Storage Facility (313), Composting Facility (317), Heavy Use Area Protection (561), Underground Outlet (620), and/or Diversion (362) to capture flow from downspouts and route away from contaminated areas as needed.

**Before Situation:**

Runoff water from the roof of the livestock confinement building falls onto the loafing area. The addition of extra water to the contaminated surface creates additional contaminated wastewater which runs off into nearby surface waters, increasing the magnitude of the existing water quality resource concern and increasing the volume of material that would need to be collected, stored, treated and land applied in a waste management system.

**After Situation:**

A gutter-downspout system has been installed on the side of the building adjacent to the loafing area, routing the clean water away from the contaminated surface, and reducing the volume of contaminated runoff from the loafing area.

**Scenario Feature Measure: Linear Length of Roof to be Drained****Scenario Unit: Linear Foot****Scenario Typical Size: 70****Scenario Cost: \$631.75****Scenario Cost/Unit: \$9.02****Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.32	#####	\$94.83
<b>Materials</b>						
Gutter, Aluminum, Small	1689	Aluminum gutter (4" to 6") in width with hangers. Materials only.	Foot	\$2.68	70	\$187.60
Downspout, Aluminum, Small	1700	Aluminum downspout (3" to 5") in width with hangers. Materials only.	Foot	\$2.92	24	\$70.08
Pipe, PVC, 6", SCH 40	980	Materials: - 6" - PVC - SCH 40 - ASTM D1785	Foot	\$6.57	16	\$105.12
<b>Mobilization</b>						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$174.12	1	\$174.12

**Practice: 558 - Roof Runoff Structure****Scenario: #2 - RoofGutter,Med****Scenario Description:**

A gutter-downspout system for the side of a 70'x140' livestock confinement building, to exclude clean water from the loafing area adjacent to the building. Roof area served by the 140' long gutter is 4,900 square feet. The gutter is a 7" K-type, with two 12' downspouts to convey the roof runoff to ground level. Underground outlets (CPS 620) are then utilized to safely outlet the water from the downspouts. Facilitates waste management and protects environment by minimizing clean water additions to waste systems and addresses water quality concerns.

Associated practices include Waste Storage Facility (313), Composting Facility (317), Heavy Use Area Protection (561), Underground Outlet (620), and/or Diversion (362) to capture flow from downspouts and route away from contaminated areas as needed.

**Before Situation:**

Runoff water from the roof of the livestock confinement building falls onto the loafing area. The addition of extra water to the contaminated surface creates additional contaminated wastewater which runs off into nearby surface waters, increasing the magnitude of the existing water quality resource concern and increasing the volume of material that would need to be collected, stored, treated and land applied in a waste management system.

**After Situation:**

A gutter-downspout system has been installed on the side of the building adjacent to the loafing area, routing the clean water away from the contaminated surface, and reducing the volume of contaminated runoff from the loafing area.

**Scenario Feature Measure:** Linear Length of Roof to be Drained**Scenario Unit:** Linear Foot**Scenario Typical Size:** 140**Scenario Cost:** \$2,490.32**Scenario Cost/Unit:** \$17.79**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.32	7	\$142.24
<b>Materials</b>						
Pipe, PVC, 8", SCH 40	981	Materials: - 8" - PVC - SCH 40 - ASTM D1785	Foot	\$9.65	16	\$154.40
Gutter, Aluminum, Medium	1690	Aluminum gutter (7" to 9") in width with hangers. Materials only.	Foot	\$9.13	140	\$1,278.20
Downspout, Aluminum, Medium	1701	Aluminum downspout (6" to 8") in width with hangers. Materials only.	Foot	\$30.89	24	\$741.36
<b>Mobilization</b>						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$174.12	1	\$174.12

**Practice: 558 - Roof Runoff Structure****Scenario: #3 - RoofGutter, Large****Scenario Description:**

A gutter-downspout system for the side of a 160'x220' livestock confinement building, to exclude clean water from the loafing area adjacent to the building. Roof area served by the 220' long gutter is 17,600 square feet. The gutter is 11", with two 12' downspouts to convey the roof runoff to ground level. Underground outlets (CPS 620) are then utilized to safely outlet the water from the downspouts. Facilitates waste management and protects environment by minimizing clean water additions to waste systems and addresses water quality concerns.

Associated practices include Waste Storage Facility (313), Composting Facility (317), Heavy Use Area Protection (561), Underground Outlet (620), and/or Diversion (362) to capture flow from downspouts and route away from contaminated areas as needed.

**Before Situation:**

Runoff water from the roof of the livestock confinement building falls onto the loafing area. The addition of extra water to the contaminated surface creates additional contaminated wastewater which runs off into nearby surface waters, increasing the magnitude of the existing water quality resource concern and increasing the volume of material that would need to be collected, stored, treated and land applied in a waste management system.

**After Situation:**

A gutter-downspout system has been installed on the side of the building adjacent to the loafing area, routing the clean water away from the contaminated surface, and reducing the volume of contaminated runoff from the loafing area.

**Scenario Feature Measure: Linear Length of Roof to be Drained****Scenario Unit:** Linear Foot**Scenario Typical Size:** 220**Scenario Cost:** \$6,573.40**Scenario Cost/Unit:** \$29.88**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.32	11	\$223.52
<b>Materials</b>						
Downspout, Aluminum, Medium	1701	Aluminum downspout (6" to 8") in width with hangers. Materials only.	Foot	\$30.89	24	\$741.36
Gutter, Aluminum, Large	1691	Aluminum gutter (10" to 12") in width with hangers. Materials only.	Foot	\$24.00	220	\$5,280.00
Pipe, PVC, 8", SCH 40	981	Materials: - 8" - PVC - SCH 40 - ASTM D1785	Foot	\$9.65	16	\$154.40
<b>Mobilization</b>						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$174.12	1	\$174.12

**Practice: 558 - Roof Runoff Structure****Scenario: #4 - RockTrenchDrain****Scenario Description:**

An aggregate-filled infiltration trench lined with geotextile, 3 ft wide by 2 ft deep, is placed on each side of a 40' x 100' hoop structure storing feedstock at the headquarters site of a confined livestock operation, to exclude roof runoff from contaminated lot surfaces. Facilitates waste management and protects environment by minimizing clean water additions to waste systems and addresses water quality concerns. This scenario is to be used where environmental/design considerations, for example – snow loads, or a building without proper structural support needed for gutters- dictate the use of the trench drain. May be used to prevent roof runoff from causing erosion or ponding of water adjacent to a seasonal high tunnel, benefitting water quality, water quantity, and soil erosion. In situations where the roof runoff will not properly infiltrate the soil, a subsurface drain system will be installed using 606 - Subsurface Drain.

Associated practices include Waste Storage Facility (313), Composting Facility (317), Heavy Use Area Protection (561), Seasonal High Tunnel (798), Subsurface Drain (606), and Diversion (362).

**Before Situation:**

Runoff water from the roof of the hoop structure enters the lot. The addition of extra water to the contaminated surface creates additional contaminated wastewater which runs off into nearby surface waters, increasing the magnitude of the existing water quality resource concern and increasing the volume of material that would need to be collected, stored, treated and land applied in a waste management system.

**After Situation:**

An aggregate-filled infiltration trench lined with geotextile is placed on each side of the hoop structure. Runoff from the roof of the structure enters the infiltration trench and drains off site to a stable outlet through a subsurface drain. The volume of contaminated water at the confinement site is reduced.

**Scenario Feature Measure:** Linear Length of Roof to be Drained

**Scenario Unit:** Linear Feet

**Scenario Typical Size:** 200

**Scenario Cost:** \$1,770.96

**Scenario Cost/Unit:** \$8.85

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.28	158	\$360.24
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.15	45	\$96.75
<b>Materials</b>						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$25.33	45	\$1,139.85
<b>Mobilization</b>						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$174.12	1	\$174.12